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A NEW ATYID SHRIMP, *PALAUATYA DASYOMMA*, FROM PALAU, CAROLINE ISLANDS

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Abstract.—A new genus and species of atyid shrimp, *Palauatya dasyomma,* is described from an anchialine habitat on Anguar Island, Palau, Caroline Islands. Its relationships with *Limnocaridella* and *Edoneus* are discussed.

In the course of their work as Peace Corps biologists on Palau, Caroline Islands, Mr. Jeffrey June and Mr. Greg R. Bright made a number of collections of freshwater and marine crustaceans, which they deposited in the National Museum of Natural History, Smithsonian Institution. Among these were two collections from a former phosphate mine, both of which consisted entirely of specimens of a new genus of shrimps of the family Atyidae. I am grateful to Mr. June and Mr. Bright for making the collections available to the Smithsonian Institution, and to Dr. Raymond B. Manning, who brought the specimens to my attention. I also thank Dr. Fenner A. Chace, Jr. and Dr. Horton H. Hobbs, Jr. for criticisms of the manuscript.

Palauatya, new genus

Diagnosis.—Carapace smooth, without spines; rostrum short, unarmed. Eyes pigmented. Abdominal pleura rounded. Telson bearing 2 pairs of dorsal spines, 4 pairs of spines and a pair of simple setae on posterior margin. Exopods present only on maxillipeds. Epipods borne on second and third maxillipeds and first, second, and third pereiopods. Branchiae limited to pleurobranchs corresponding to pereiopods 1 through 4. Single mastigobranchs present on coxae of pereiopods 1 through 4. Endopod of first pleopod of male without appendix; endopod of second pleopod of male with strong appendix masculina overreaching endopod. Lateral ramus of uropod bearing 5 to 9 spines mesiad of lateral angle and overlapping diaeresis.

Type-species.—*Palauatya dasyomma,* new species.

Relationships.—This genus belongs to Bouvier's "série caridellienne" (Bouvier, 1925:41, 89–91), and shows affinities with *Limnocaridella* Bouvier (1913) and *Edoneus* Holthuis (1978). Its branchiae and exites are more closely allied with those of *Limnocaridella* (from Lake Albert) than with those of *Edoneus* (from New Guinea). However, it differs from *Limnocaridella* in that it does not possess an antennal spine, its rostrum is short and unarmed, and the caridean lobe is vestigial.

Table 1.—Principal features differentiating *Limnocaridella*, *Edoneus*, and *Palauatya*.

	Palauatya	*Edoneus*	*Limnocaridella*
Pleurobranchs on pereiopods	1st 4	all	1st 4
Pleurobranchs on maxillipeds	–	–	–
Arthrobranchs	–	–	1*
Mastigobranchs on 1st 4 pereiopods	x	?	x
Epipods on 2nd & 3rd maxillipeds; 1st 3 pereiopods	x	–	x
Epipods on 2nd & 3rd maxillipeds (maybe 1st); 1st 4 pereiopods	–	x	–
Telson dorsal spines	2 pr.	>2 pr.	2 pr.
Telson posterior spines	4 pr.	5 pr.	4 pr.
Caridean lobe on 1st maxilliped well developed	–	x	x
Caridean lobe on 1st maxilliped vestigial	x	–	–
Antennal spine	–	–	x
Rostrum long, armed dorsally and ventrally	–	–	x
Rostrum short and unarmed	x	x	–

* Rudimentary.

The principal features differentiating the three genera are summarized in Table 1.

Name.—From Palau (in the Caroline Islands) plus *Atya*.

Palauatya dasyomma, new species

Rostrum (Figs. 1–3) simple, spinelike, not reaching beyond eyes. Carapace smooth, without spines; antennal angle produced slightly anteriorly; pterygostomian area rounded, not produced.

Pleura of abdominal somites (Fig. 1) broadly rounded.

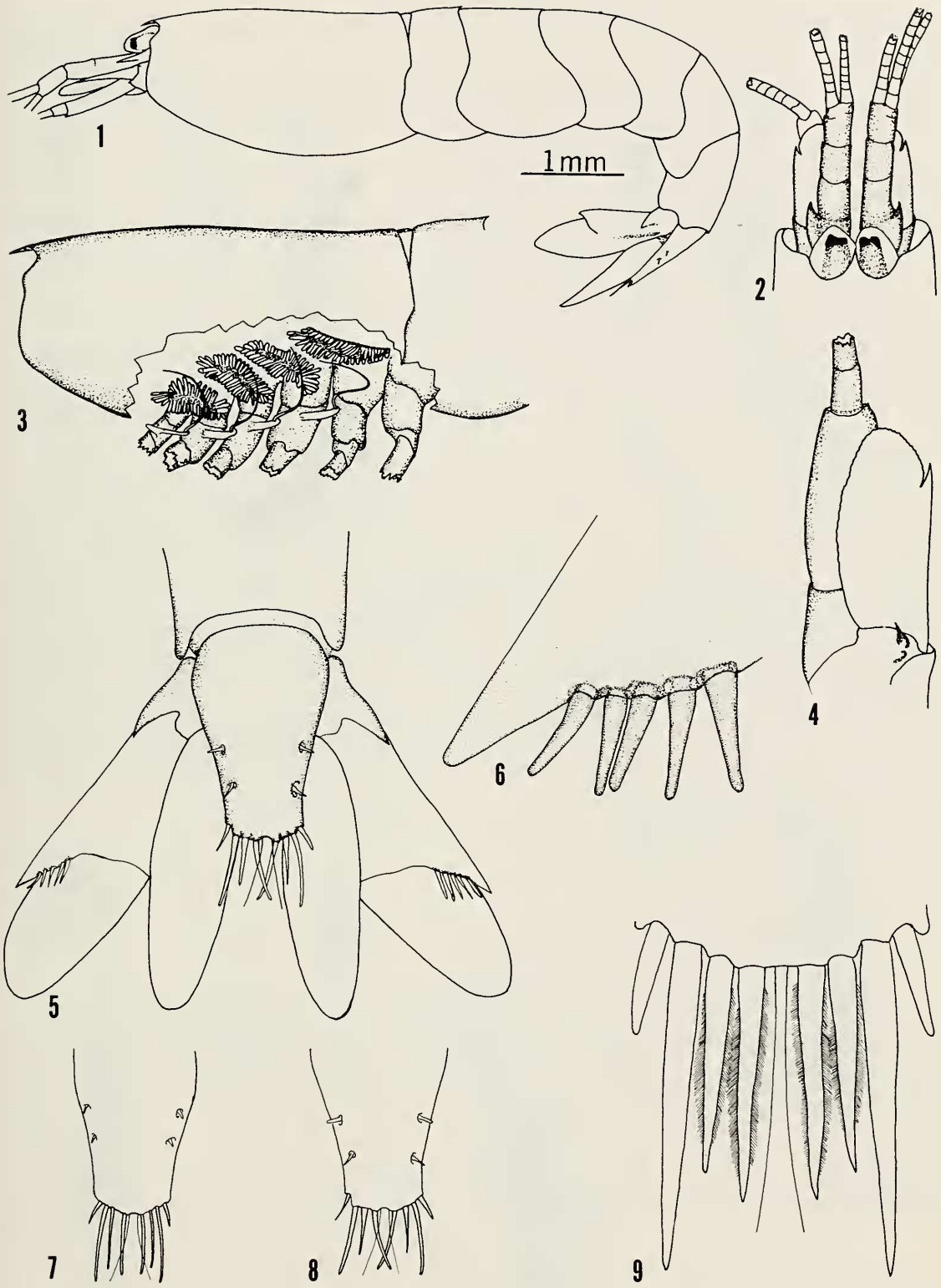
Telson (Figs. 5, 7–9) 1 ½ times as long as broad; anterior pair of dorsal spines situated near midlength; posterior pair situated about midway between anterior pair and posterior margin. Telson terminating in 4 pairs of unequal spines and a single pair of simple setae situated between median pair; mesial 2 pairs of spines with fine setae (Fig. 9).

Lateral ramus of uropod (Figs. 5, 6) with 5 to 9 spines mesiad of lateral angle and overlapping diaeresis.

Eyes (Figs. 1, 2, 28–31) large, pigmented, and, in all specimens examined, with pigmented portion apparently retracted from transparent non-faceted corneal covering. Covering of each eye bulbous (possibly artifact of fixation); surface bearing scattered setae.

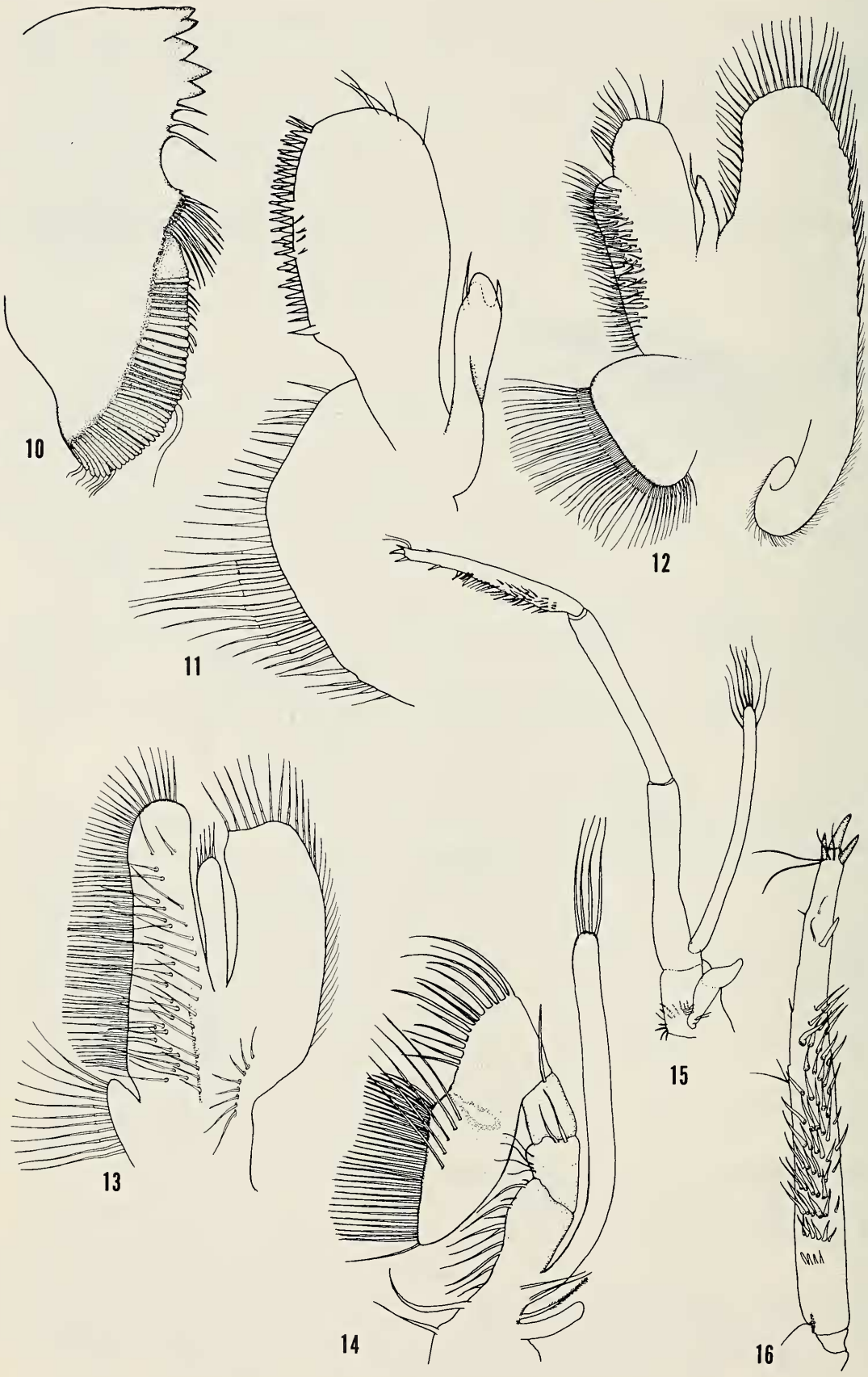
Antennular peduncle (Fig. 2) with short, acute stylocerite reaching past midlength of basal segment. Second segment subequal in length to third.

Antennal scale (Fig. 4) more than twice as long as wide; outer margin



Figs. 1–9. *Palauatya dasyomma*: **1,** Lateral view of male holotype; **2,** Dorsal view of anterior part of same specimen; **3,** Lateral view with part of carapace removed to show pleurobranchs, mastigobranchs, and epipods; **4,** Antennal scale; **5,** Telson and uropods; **6,** Lateral angle of lateral ramus of left uropod; **7, 8,** Variations in telson configuration; **9,** Detail of terminal part of telson, showing fine setae on mesial 2 pairs of spines.

Scale refers only to Figs. **1** and **2.**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nearly straight, ending in tooth; scale almost reaching distal end of antennal peduncle.

Mandible (Fig. 10) with incisor process bearing 5 strongly developed teeth, three adjacent setae, and mesially situated brush of 8 to 15 setae; molar process with dense row of parallel elements, some bearing spinules or setae. First maxilla (Fig. 11) with distal lacinia spatulate, supporting double row of short spines on mesial face; proximal lacinia rounded; palp weakly tapered and bearing 2 subterminal spines. Second maxilla (Fig. 12) with scaphognathite broadly rounded distally, recurved proximally; palp small, with single subterminal spine; distal endite rounded; middle endite (lower endite of Holthuis 1978:221) densely spined mesially and, in some specimens, rolled laterally on itself, appearing as spiny process rather than flattened lobe; proximal endite rounded.

First maxilliped (Fig. 13) with rounded palp bearing several terminal setae; endites unremarkable; exopod subtruncate distally with vestigial caridean lobe; epipod absent. Second maxilliped (Fig. 14) with well developed exopod overreaching endopod by less than 1/6 its own length and bearing several terminal setae and small digitiform epipod, but lacking podobranch. Third maxilliped (Figs. 15, 16) with well developed exopod and epipod; gills absent; endopodal segments subequal in length; terminal segment bearing 12 rows of coarse spines on proximal 2/3 of flexor face, single spine between these and distal end, and three terminal spines.

Branchiae and endites as follows:

	Maxillipeds			Pereiopods				
	1	2	3	1	2	3	4	5
Pleurobranchs	–	–	–	1	1	1	1	–
Arthrobranchs	–	–	–	–	–	–	–	–
Podobranchs	–	–	–	–	–	–	–	–
Mastigobranchs	–	–	–	1	1	1	1	–
Epipods	–	1	1	1	1	1	–	–
Exopods	1	1	1	–	–	–	–	–

Pereiopods as illustrated (Figs. 17–24). Fingers of chelae of first and second pereiopods bearing terminal tufts of hair. Second pereiopod longer than first. Third, fourth, and fifth pereiopods slender; dactyl and propodus armed with multiple spines on flexor face; merus equipped with single spine about midlength.

Endopod of first pleopod of male (Fig. 25) subtriangularly ovate, without appendix; several setae present on lateral margin; exopod larger, bearing

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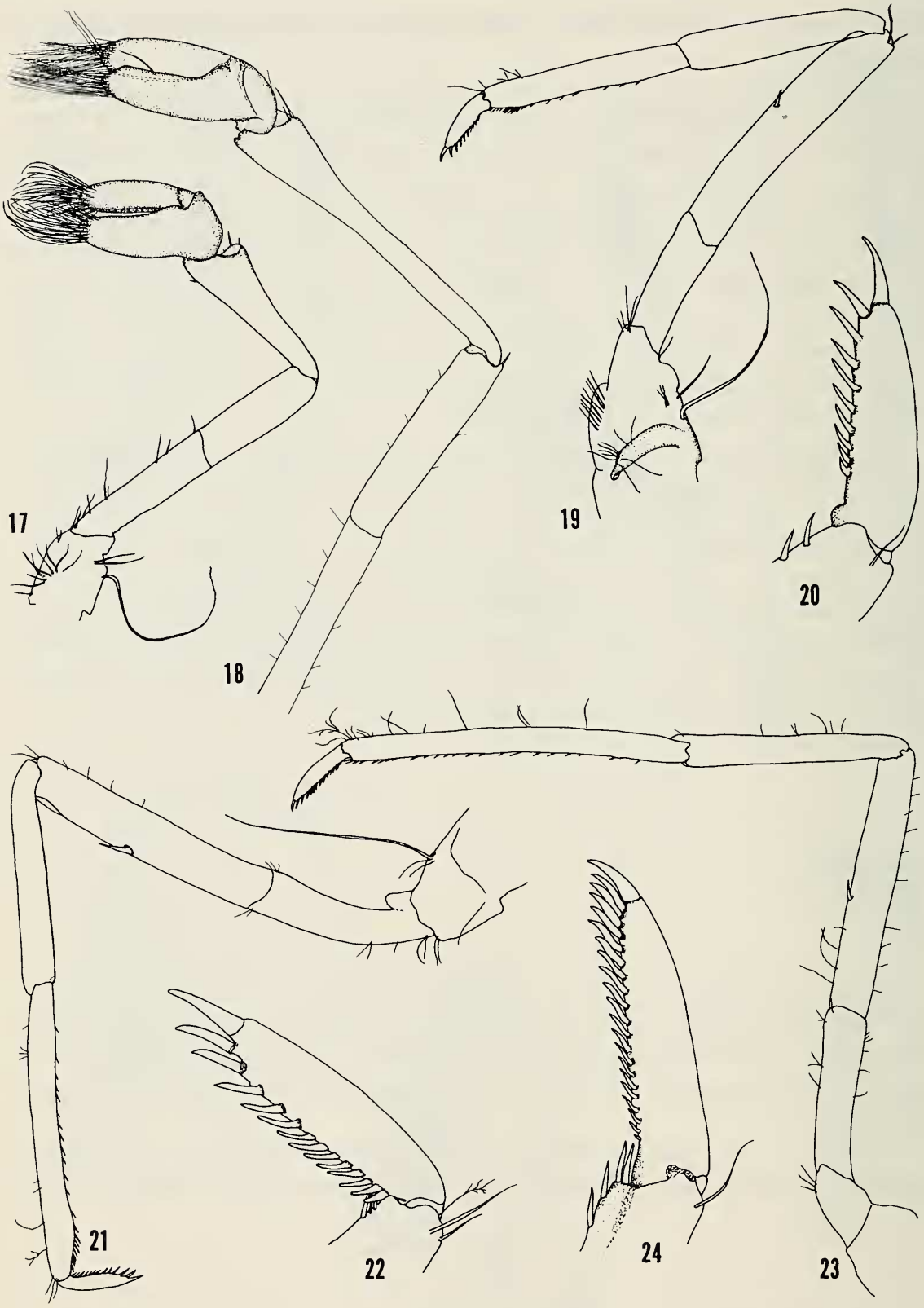
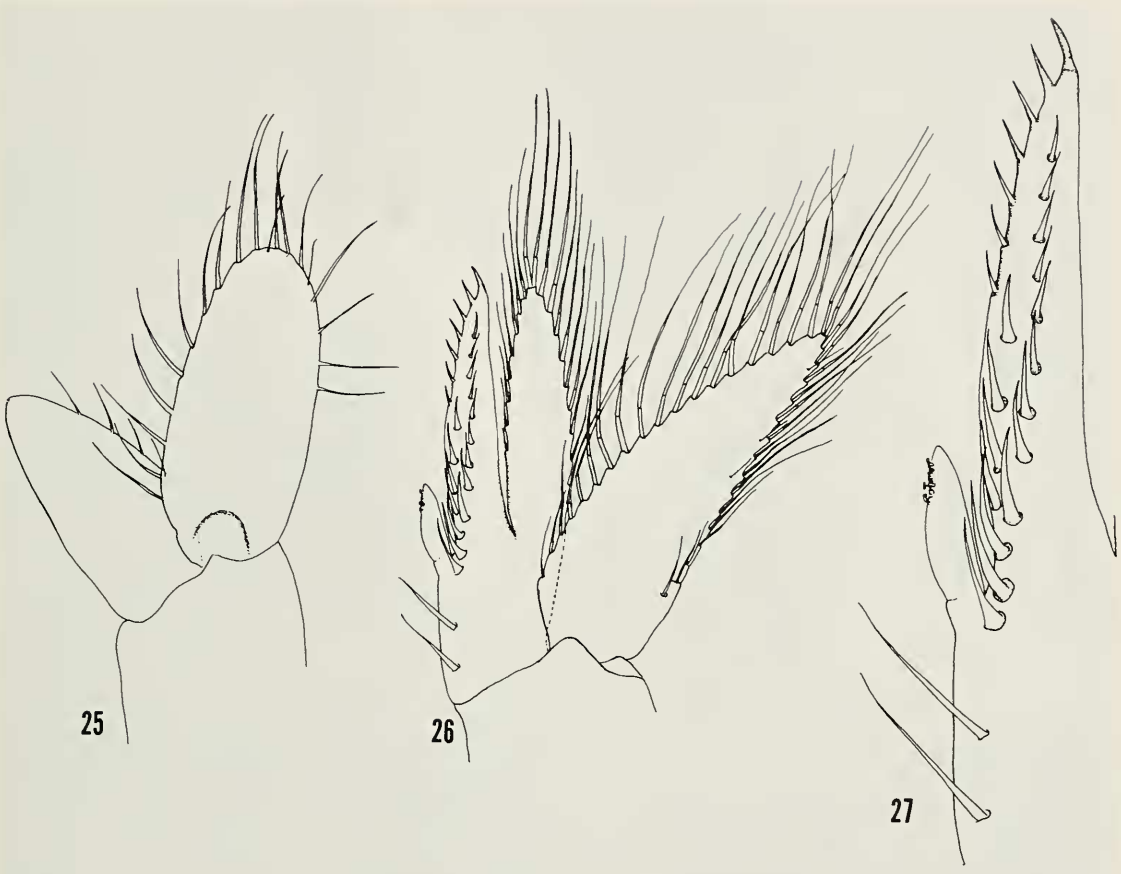
Figs. 10–16. *Palaemonetes dasyomma*: **10,** Mandible; **11,** First maxilla; **12,** Second maxilla; **13,** First maxilliped; **14,** Second maxilliped; **15,** Third maxilliped; **16,** Detail of terminal segment of third maxilliped.



Figs. 17–24. *Palauatya dasyomma*: **17,** First pereiopod; **18,** Second pereiopod; **19,** Third pereiopod; **20,** Detail of dactyl of third pereiopod; **21,** Fourth pereiopod; **22,** Detail of dactyl of fourth pereiopod; **23,** Fifth pereiopod; **24,** Detail of dactyl of fifth pereiopod.



Figs. 25–27. *Palauatya dasyomma*: **25,** Endopod and exopod of first pleopod of male; **26,** Terminal part of second pleopod of male; **27,** Detail of appendix masculina and appendix interna of second pleopod of male.

mesial, distal, and lateral setae. Appendix masculina of second pleopod of male (Figs. 26, 27) overreaching endopod, armed with spines on mesial and posterior faces and bearing single terminal spine; appendix interna small, not so long as width of endopod base.

Size.—Postorbital carapace length of male holotype 2.0 mm. Postorbital carapace lengths of 4 male specimens 2.0 to 2.25 mm (average, 2.12 mm). Postorbital carapace lengths of 8 female specimens 2.0 to 2.75 mm (average, 2.28 mm).

Disposition of types.—The holotypic male, allotypic female, and a series of paratypes are deposited in the National Museum of Natural History (USNM 180168, 180169, 180170, 180171).

Distribution.—Known only from an anchialine lake formed by phosphate mining operations on Anguar Island, Palau, Caroline Islands (6°54′49″N; 134°08′12″E).

Ecological data.—The lake in which the shrimps were collected is a former phosphate mine, which was worked from 1909 to 1955. Now filled with

Figs. 28–31. *Palauatya dasyomma*: **28,** Scanning electron microscope (SEM) view of anterior part of body, carapace removed, showing bulbous corneal covering (×50); **29,** Same (×100); **30,** Mesial view of right corneal covering, showing anteriorly directed setae (×600); **31,** Dorsal view of anterior part of left corneal covering, showing detail of setae (×1,000).

water, the lake averages 5 m in depth, is 2,000 m^2 in surface area, and is connected to the sea by subterranean fissures. The chloride content of the water in this anchialine habitat (see Holthuis, 1973) was recorded as 14000 ppm by the collectors.

The shrimp which are bright red when living, were abundant on algal mats and were reported to have been feeding on this algae near the banks of the lake. Collections were made on 10 November 1977 and on 27 March 1979.

Name.—From the Greek "*dasys,*" hairy and "*omma,*" eye. Gender feminine.

Remarks.—Because the genera *Palauatya, Edoneus,* and *Limnocaridella* are each monotypic, the relationships between them, discussed above, hold for the individual species.

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